


Discovering the Mid-America Poison Control Center and Mid-America Pediatric Environmental Health Specialty Unit

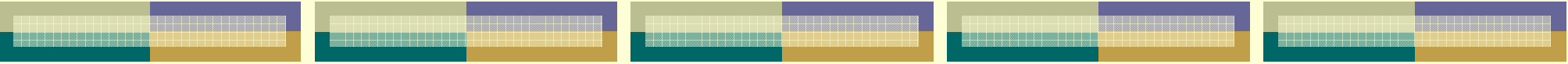
Jennifer A. Lowry, MD

Medical Director, Mid-America
Poison Control Center




Poison Control Centers

- Currently, 61 PCCs in the United States
 - Entire population of 50 states, DC, Puerto Rico, Guam, and Virgin Islands are served by PCCs
 - American Association of Poison Control Centers
 - National toll free number
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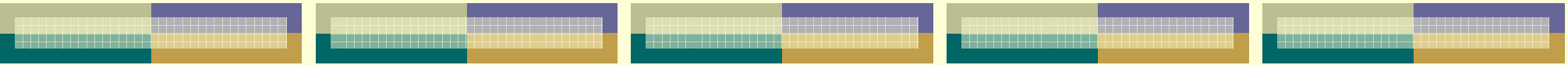
Toxic Exposure Surveillance System (TESS)

- Data compiled by AAPCC on behalf of US PCCs
 - Used to identify hazards early, focus prevention education, guide clinical research, direct training, and detect chem/bioterrorism incidents.
 - Has prompted reformulations, repackaging, recalls, and bans; are used to support regulatory actions; and forms basis of postmarketing surveillance of new drugs and products.
- 




TESS database

- Mainly concentrates on human exposures
 - Other calls
 - animal poison exposures
 - human confirmed nonexposures
 - animal confirmed nonexposures
 - drug information calls
- 




Follow-up calls

- Provides further patient guidance
 - Confirm compliance with recommendations
 - Gather final outcome data
 - Usually done in 50% of cases
 - Multiple follow-up calls in 25% of cases
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PCC data

- Limited to calls to the PCC and is an underestimation of poison exposures
 - 2,395,582 human exposures reported
 - 92.6% occurred at residence
 - peak call hours were 4-10 pm
 - 52% occur in children < 6 years of age
 - 1,106 reported fatalities
 - 34 in children less than 6 years of age.
- 




Mid-America Poison Control Center






Mission Statement

- The Mission of the Mid-America Poison Control Center is to serve the citizens of Kansas by providing accessible poison and medication-related emergency treatment advice, referral assistance and comprehensive information on poisons and toxins 24 hours a day. The poison center staff is committed to cost saving measures in the management of poison patients. This mission included appropriate management of exposure victims in their homes and workplace when possible or referrals for hospitals management, when necessary. Poison prevention education efforts are also incorporated within the scope of our mission.
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Vision

- To serve as a distinguished and unbiased advocate of public health and poisoning safety, by identifying and eliminating poisoning hazards, and by assuring unimpaired access to reliable information and poisoning treatment guidance to the people of Kansas.
- 




Goals

- Unimpaired access to quality poison control services for all Kansas residents. Early detection and elimination of emerging problems or poisoning hazards.
 - Decreased unnecessary utilization of health care facilities for poison exposures.
- 




Primary Functions

- To provide emergency treatment recommendations in the event of a poisoning and to provide consultation on various aspects of toxicity.
 - First-aid recommendations for victims of poisoning.
 - Treatment advice for less serious poisoning that can be treated at home.
 - Consultation to health care providers regarding treatment.
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Information about Poison Center

- We are a 24 hour a day/ 365 days of the year facility. We are located at The University of Kansas Hospital in Kansas City, Kansas.
 - We have registered nurses and pharmacists answering calls.
 - June 2007, start back up service for KDHE and Epidemiology Hotline
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People






Poison Control Center Staff

- Lisa Oller, RPh, CSPI - 17years
 - Bobbi Wainscott, RN, CSPI - 6 years
 - Anita Johansson, RN, CSPI - 6 years
 - Jean Heffel, RN, SPI- 3 years
 - E. Tina Scott, RN, SPI - 3 years
 - Amber Ashworth, RN, SPI - 1 year
 - Janiene Nash, RN, PIP - 1 year
- 




Additional Staff

- Education Coordinator (TBA)
 - Travels throughout state for conferences and lay public and health care professional education
 - Tama Sawyer, PharmD
 - Managing Director
 - Administrative responsibilities of MAPCC
- 




Additional Staff

- Jennifer Lowry, MD
 - Medical Director
 - Clinical Faculty Appointment and Clinical Privileges in Department of Pediatrics and Internal Medicine
 - Toxicology supervision of staff of MAPCC
 - Consultation throughout State to health care professionals and public health workers.
- 




Facts at a glance

- 2003 phone contacts were greater than 40,050.
 - Human and Animal Exposures, poison information questions, and drug information questions.
 - Over 20,139 calls were human exposures and 16,119 were managed at home.
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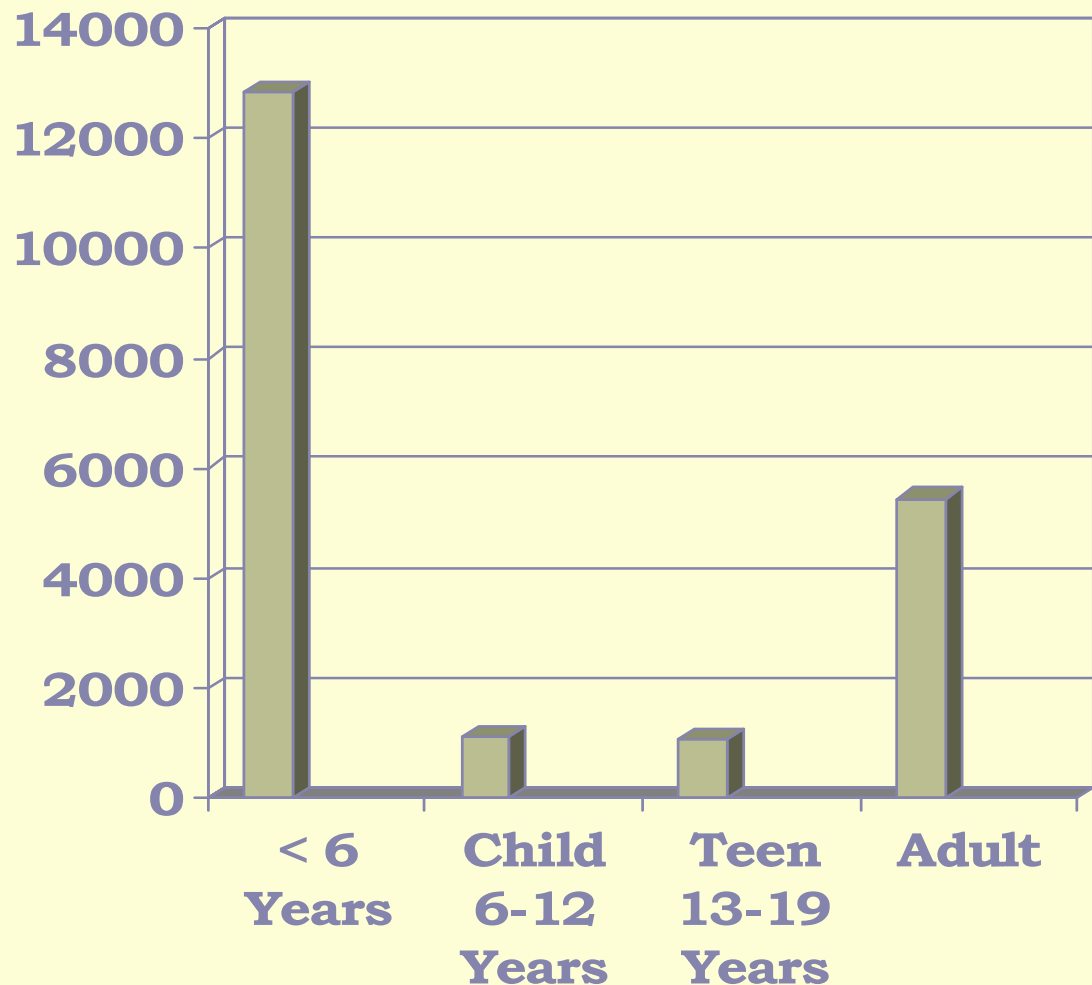


Poison Center Staff

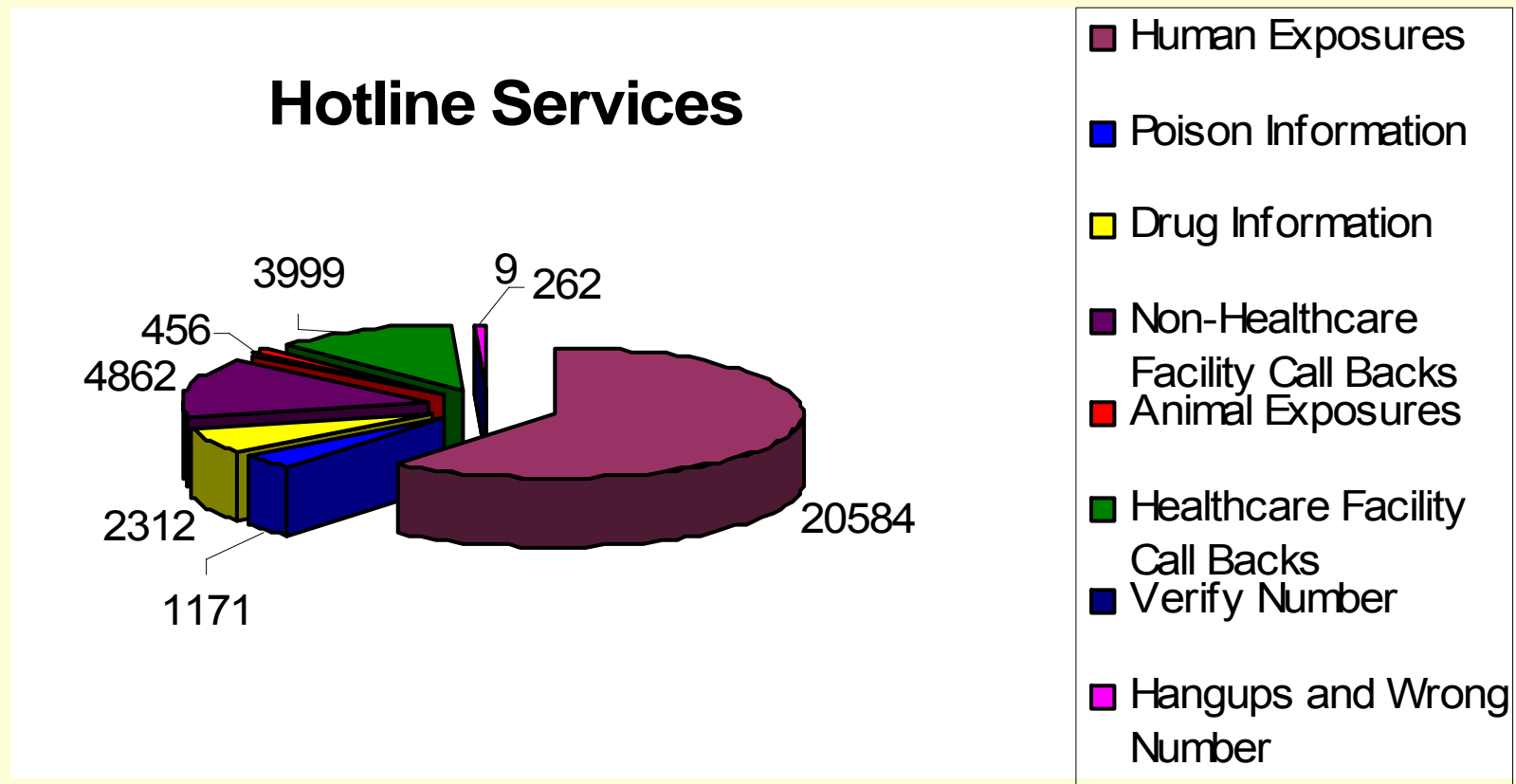
- Board eligible or certified medical toxicologist
 - Pharmacists or nurses (RNs) as poison specialists after training
 - PCC educator to provide education throughout assigned region
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Kansas Poisonings (2005)

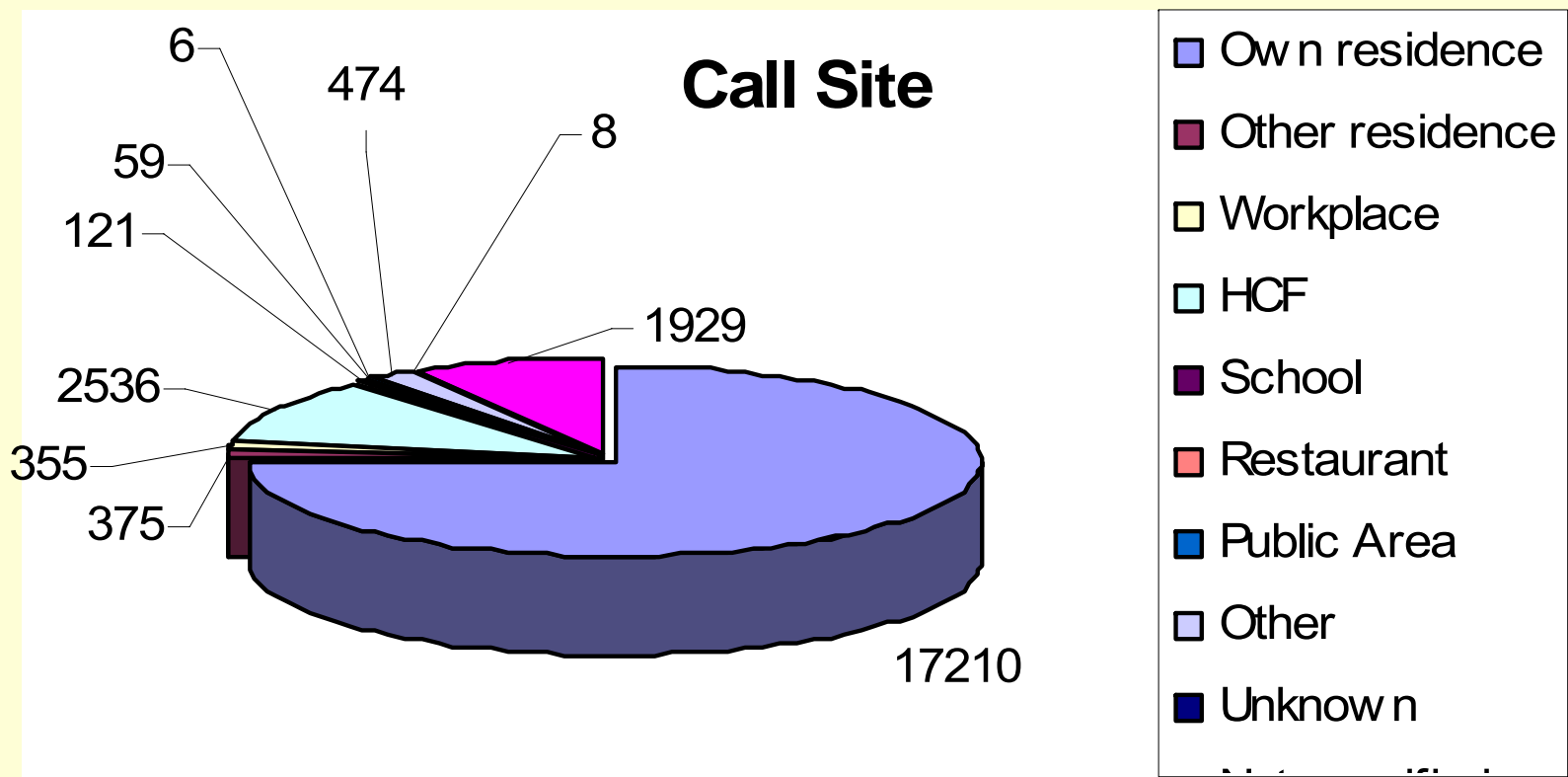
- Children < 6 Years:
12948 exposures
- Children 6-12 Years:
1128 exposures
- Teens 13-19 Years:
1067 exposures
- Adults > 19 Years:
5441 exposures



MAPCC: Hotline Services

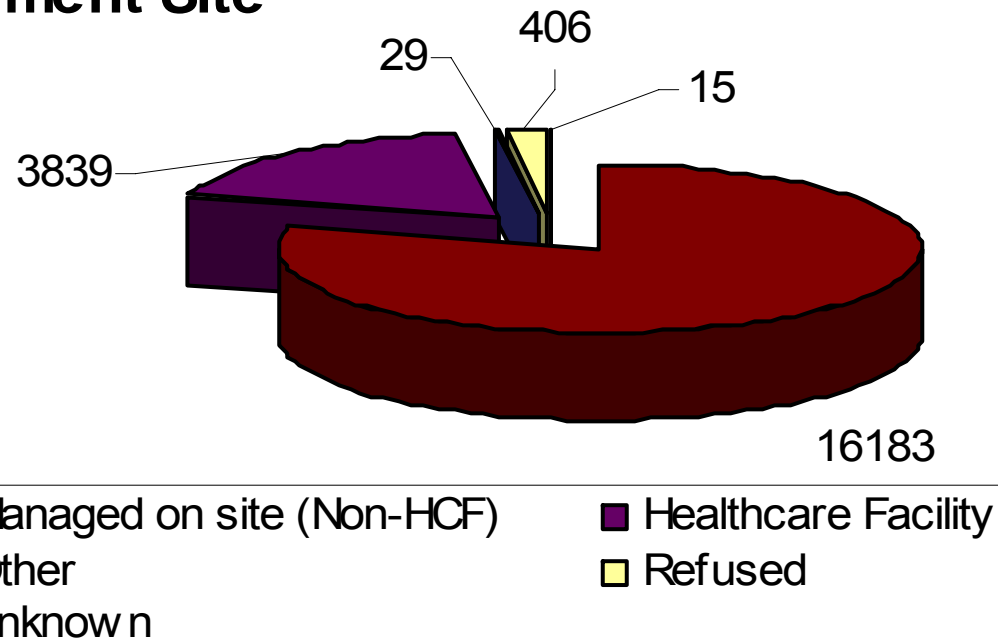


MAPCC: Call Site



MAPCC: Management Site

Management Site





Exposure Information

Exposure Reason

Unintentional 91%

Intentional 9%

Route of Exposure

Ingestion 73%

Bite/Sting 1%

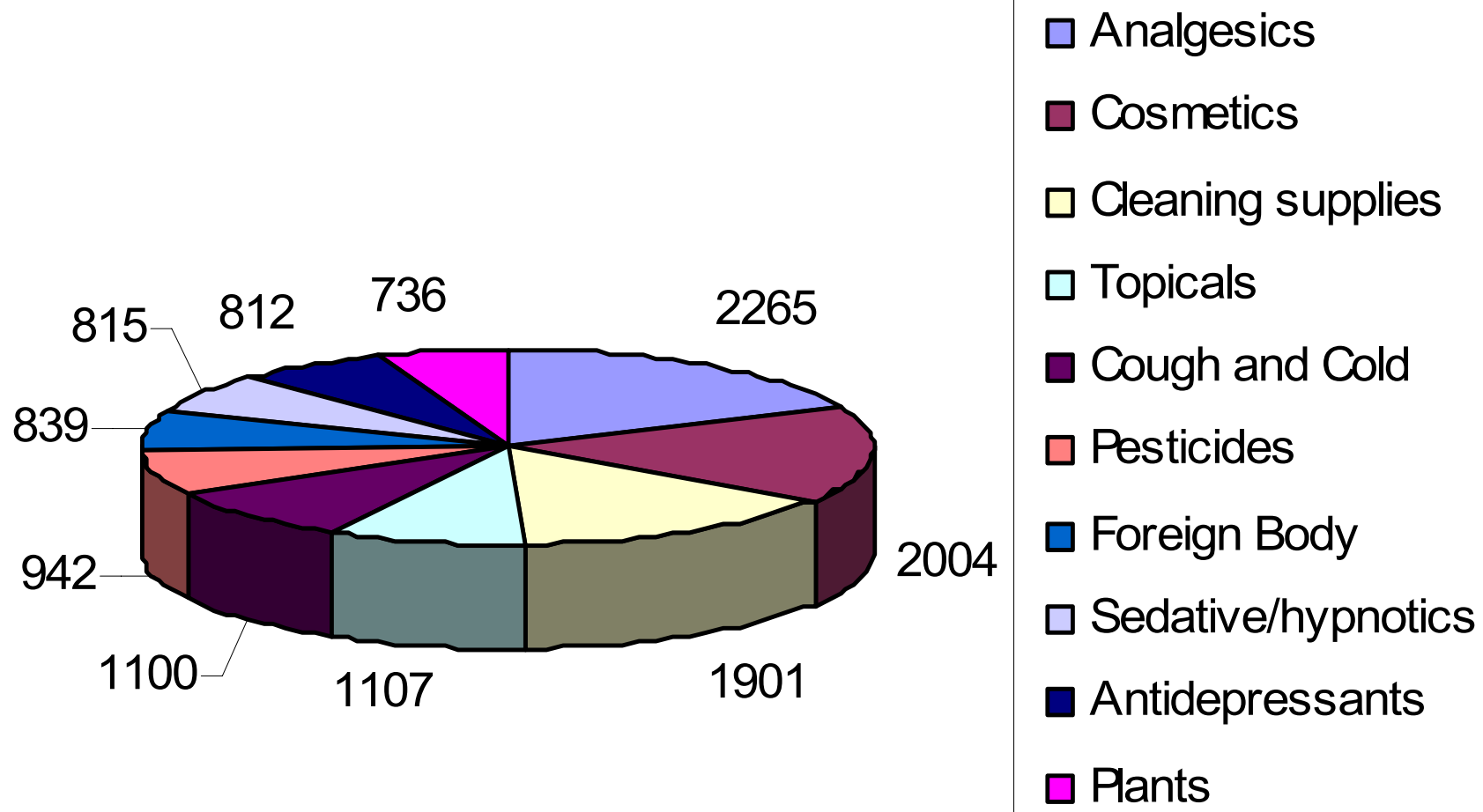
Dermal 5%

Inhalation 3%

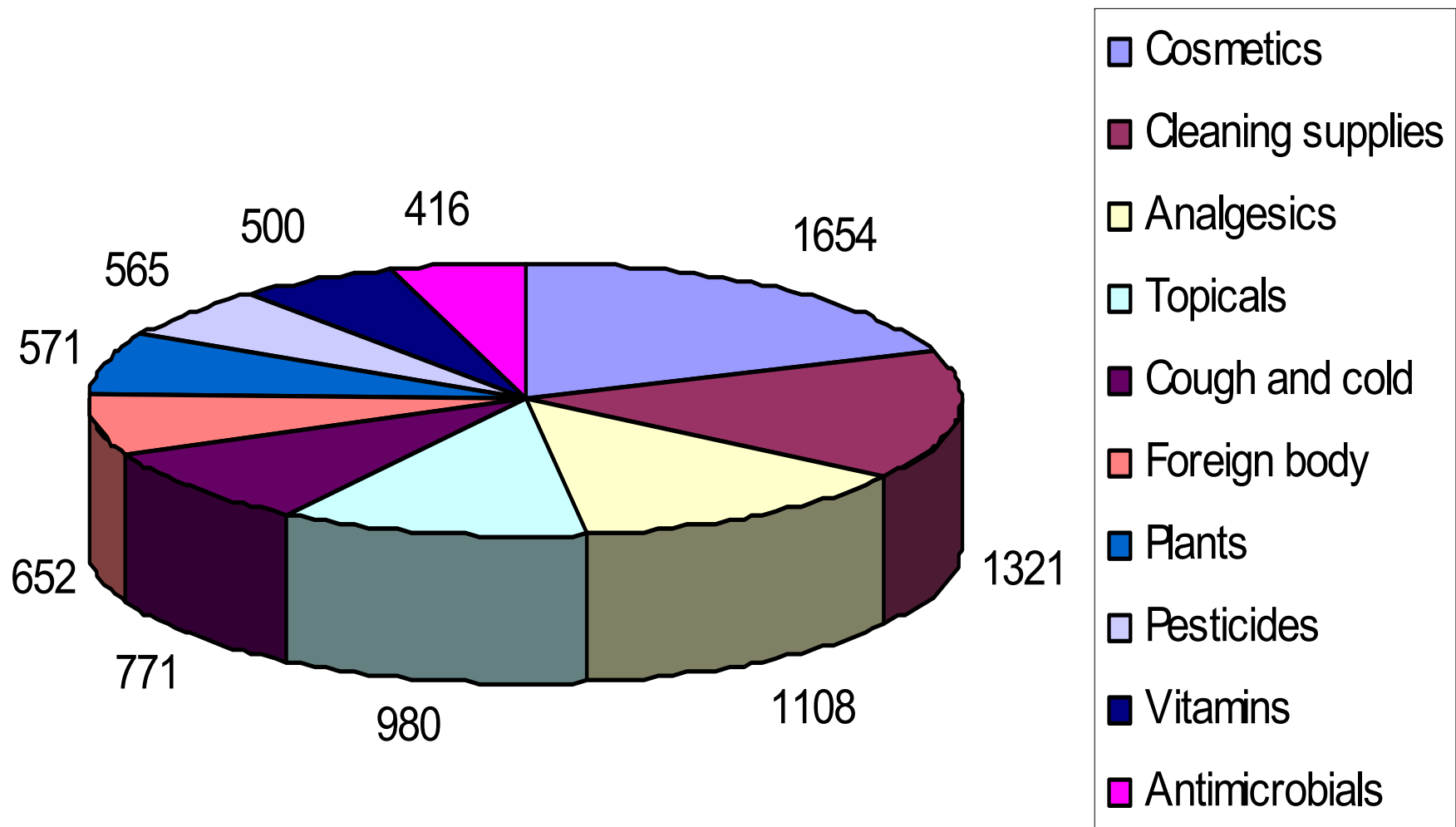
Ocular 4%

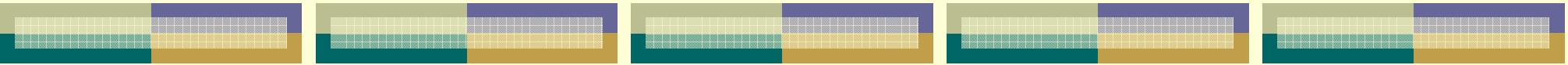


Top Substances in Adults




Top Substances in Children less than 6 years of age






Reasons to contact us

- Exposures to household chemicals or products
 - Drug ingestions
 - Inhalation gases or vapors
 - Snake bites and spider bites
 - Insect bites or stings
 - Mushrooms ingestions
 - Plant ingestions
 - Eye and or Skin Exposures
- 




New Public Education

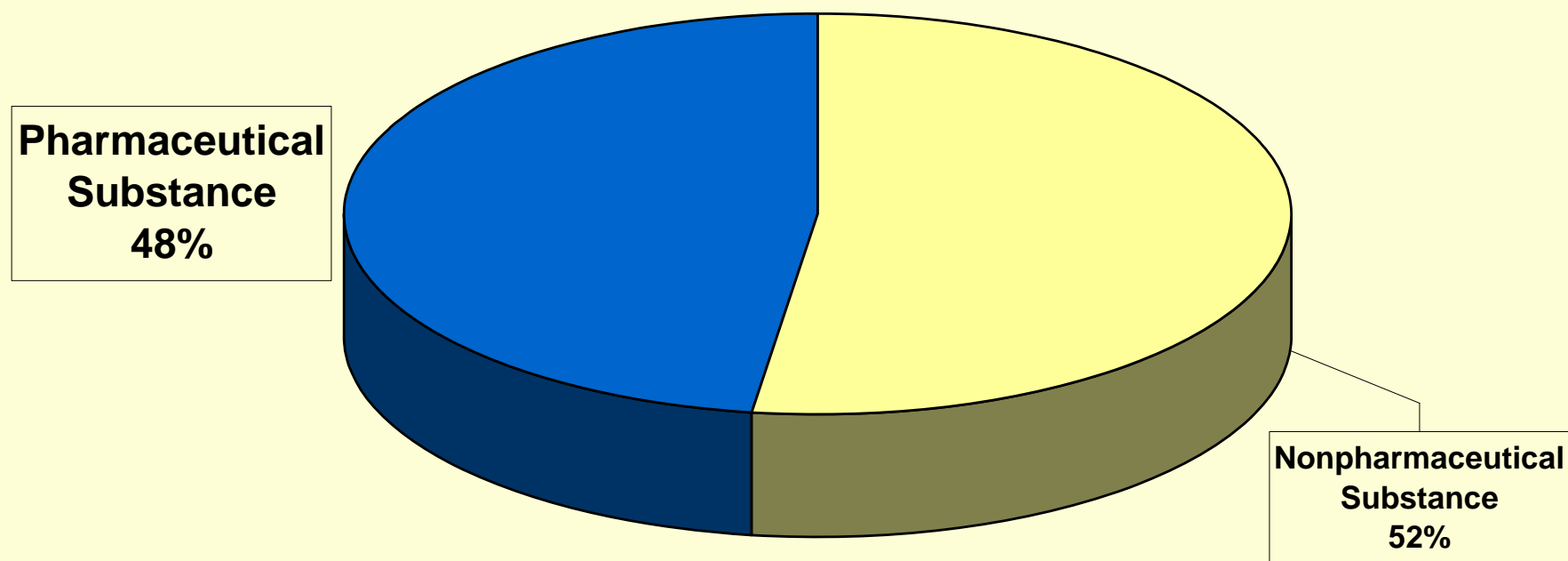
- Public Educator has been concentrating primarily on childhood poison prevention
 - Pediatrics anticipatory guidance
 - Teen substance abuse
 - SafeKids collaboration
 - Healthy Home Visitors program
 - What is missing?
- 



Grandparents Survey- Background


- In 2004, the Mid-America Poison Control Center (MAPCC) received 13,328 exposure calls in children 0-5 years.
 - 49% were due to exposure to a pharmaceutical substance
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Exposure Calls in Children < 6 years






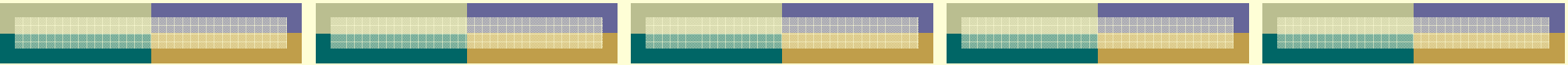
Grandparents Survey- Background

- Parents have been the target of poison education for many years, and, as a result, many are very careful about child-proofing their homes.
 - Grandparents may not be as cautious.
 - Visiting grandchildren are very curious when exploring new surroundings.
 - Many grandparents provide daycare for their grandchildren.
 - Census data suggests a great increase in the number of grandparents raising or helping to raise their grandchildren.
 - Dangerous situations also arise when grandparents come to visit and medications are left in an easily accessible location.
 - Using MAPCC data, this study was designed to assess poisonings with grandparent's medications.
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Methods

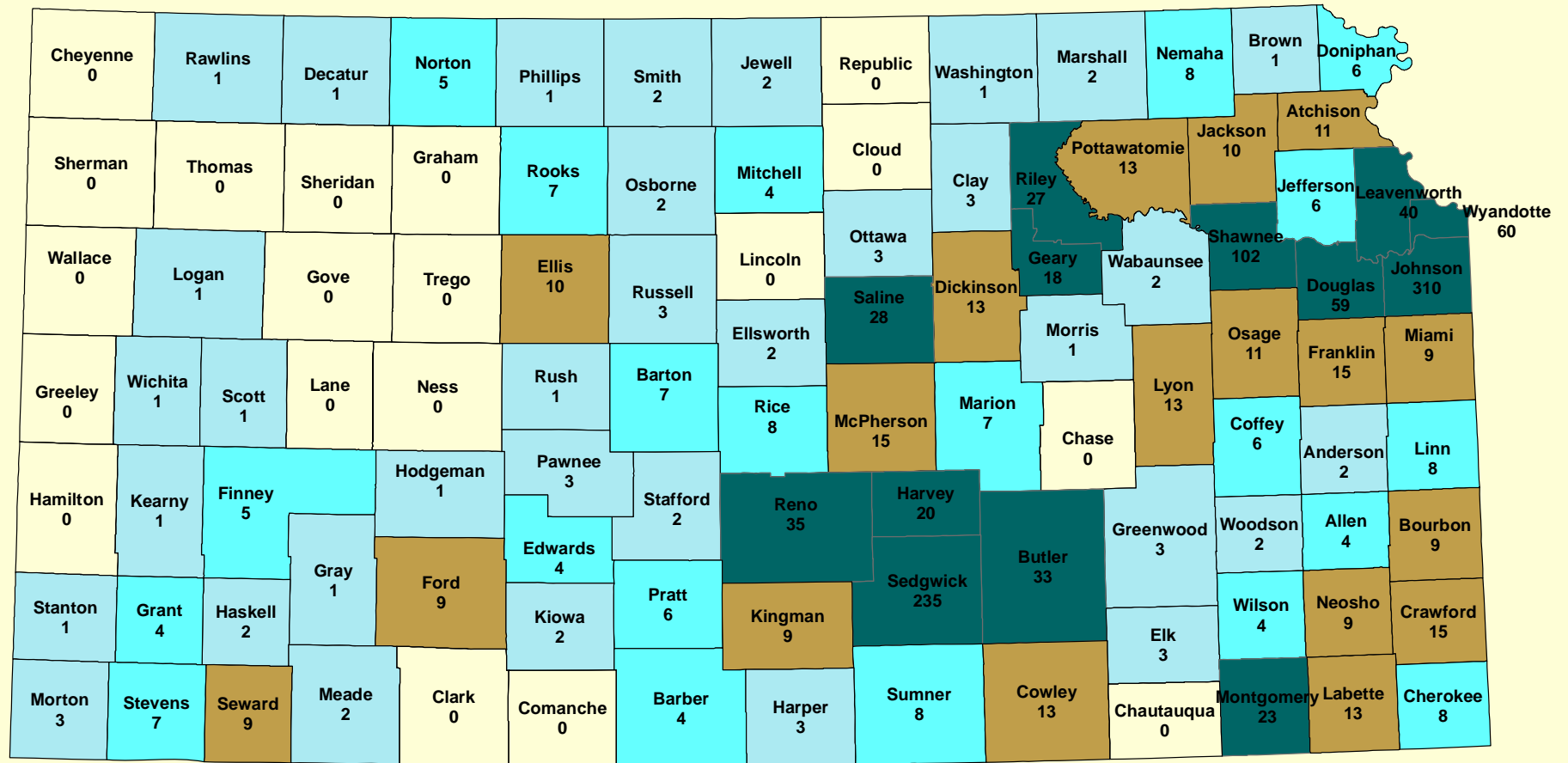
- During an 8 month period, MAPCC pediatric exposure calls were assessed for exposures to grandparent's medication
 - After verbal consent, a scripted phone survey was conducted to obtain additional information regarding the exposure.
 - Surveys were completed within 30 days of the initial call to MAPCC.
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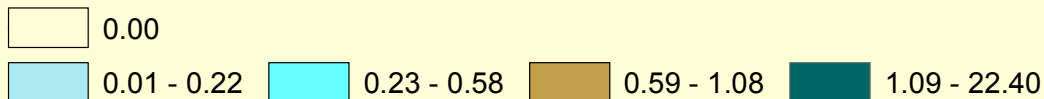
Results

- MAPCC was able to capture 4% of pediatric exposures that were a result of an ingestion of grandparent's medication.
 - Out of 156 cases identified 113 agreed to participate (72%).
 - Calls were received from numerous counties in Kansas
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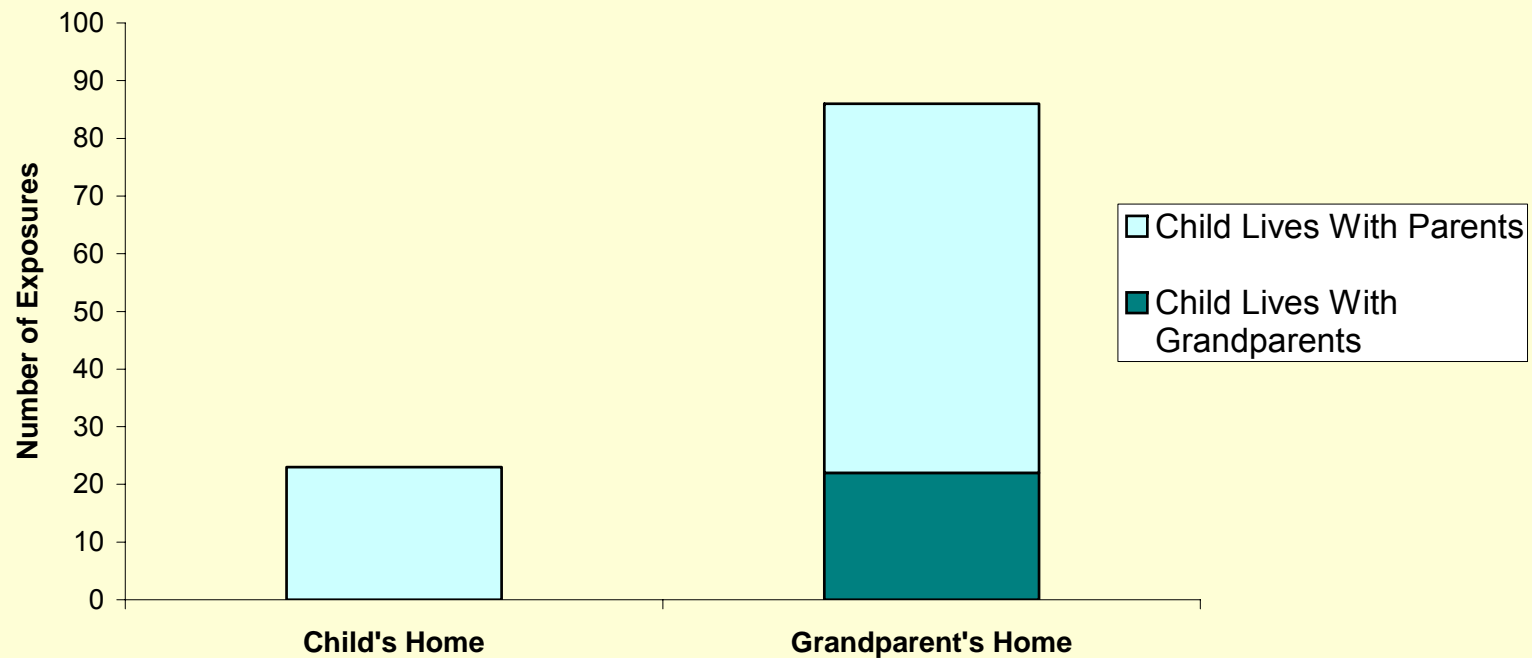
Location of Caller



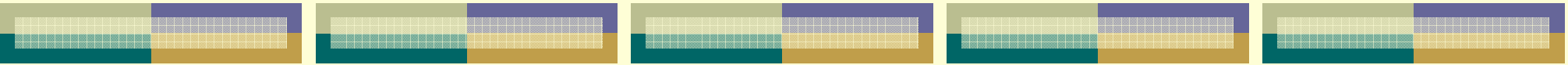
Percent of calls by county




Site of Exposure



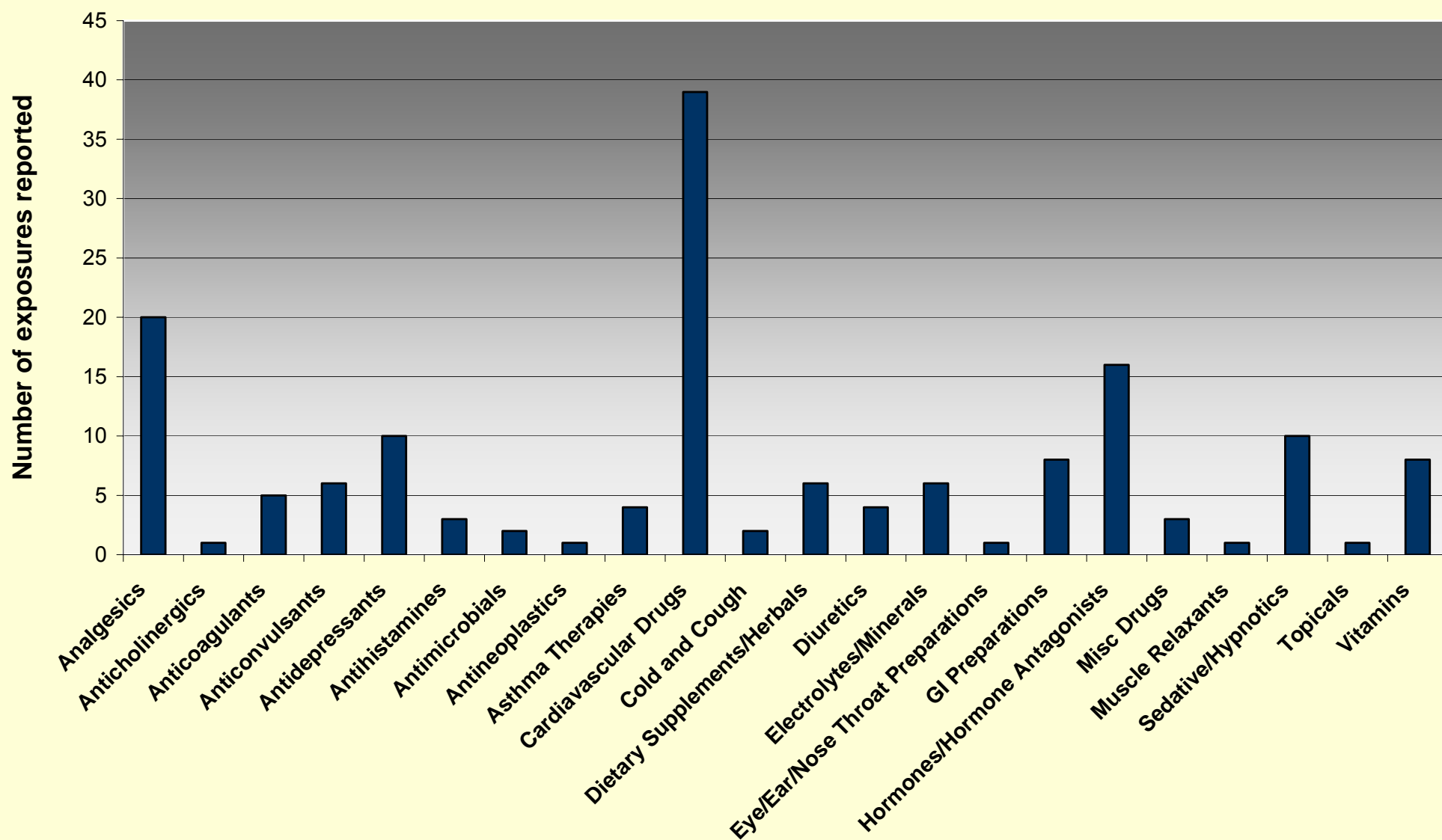
76% of these exposures occurred in the grandparent's home and 75% of these children did not live with their grandparents

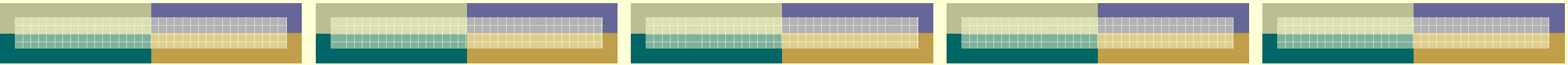


Results


- Exposures were reported to many different types of medication. Analgesics were involved in 13% of the exposures.
 - Hormones and hormone antagonists accounted for 10% of the exposures and 44% of these were oral hypoglycemic agents
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Medications Ingested

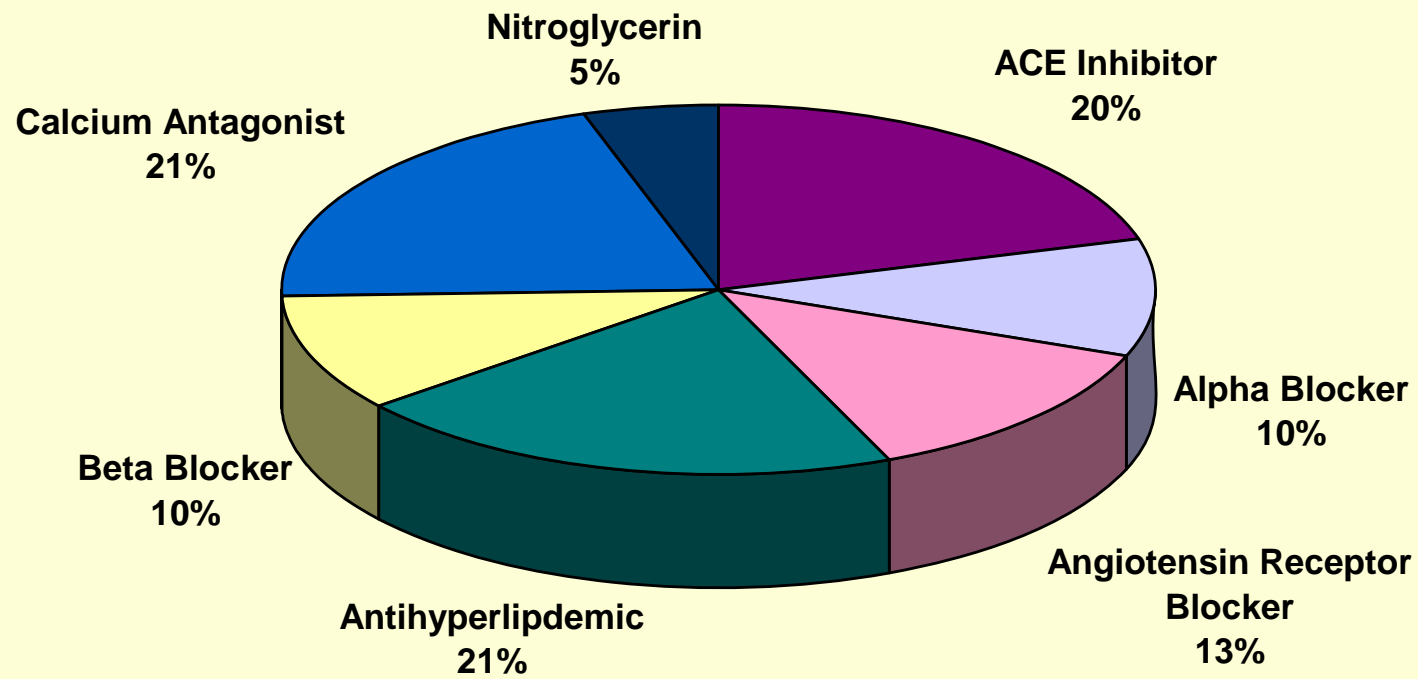




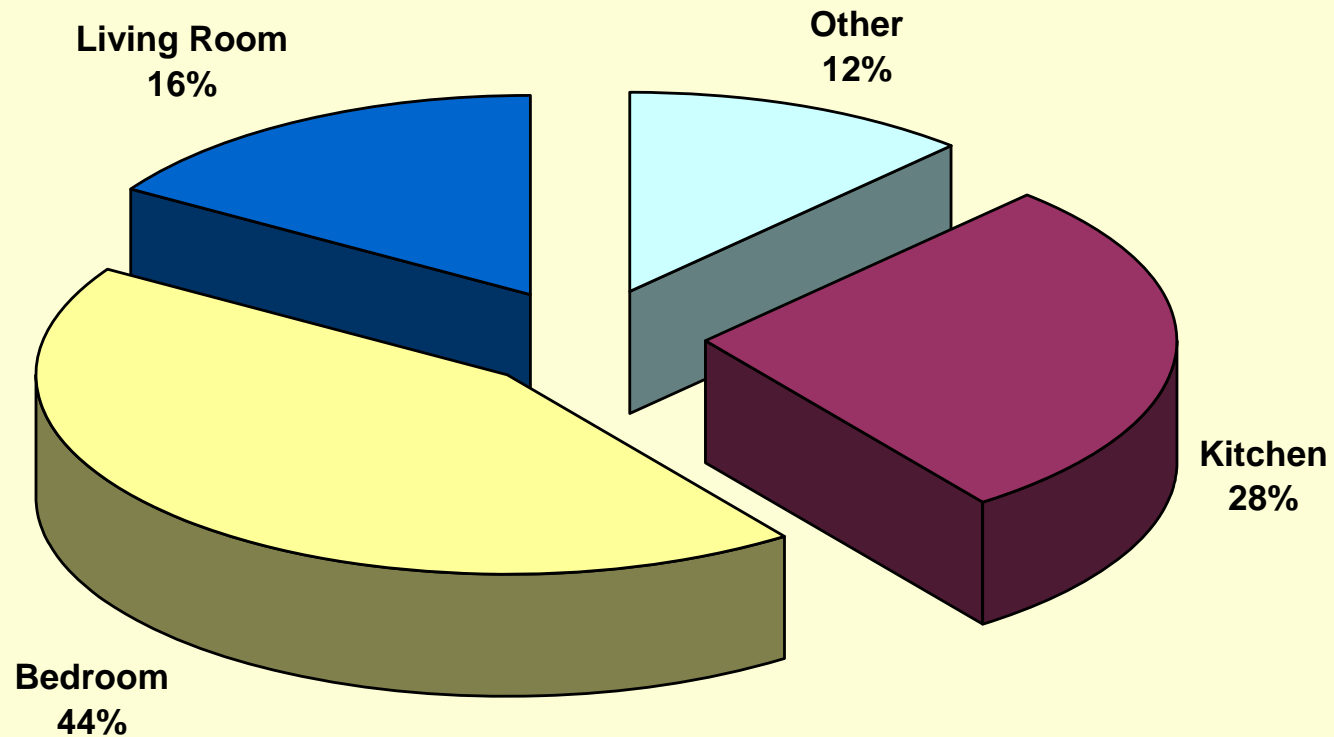
Results

- Cardiovascular drugs were involved in 25% of the exposures.
 - Of these, 20% were calcium antagonists and 10% were beta blockers
- 

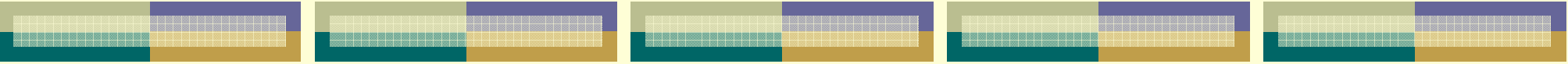
Cardiovascular Drugs




Where Did the Exposure Occur?



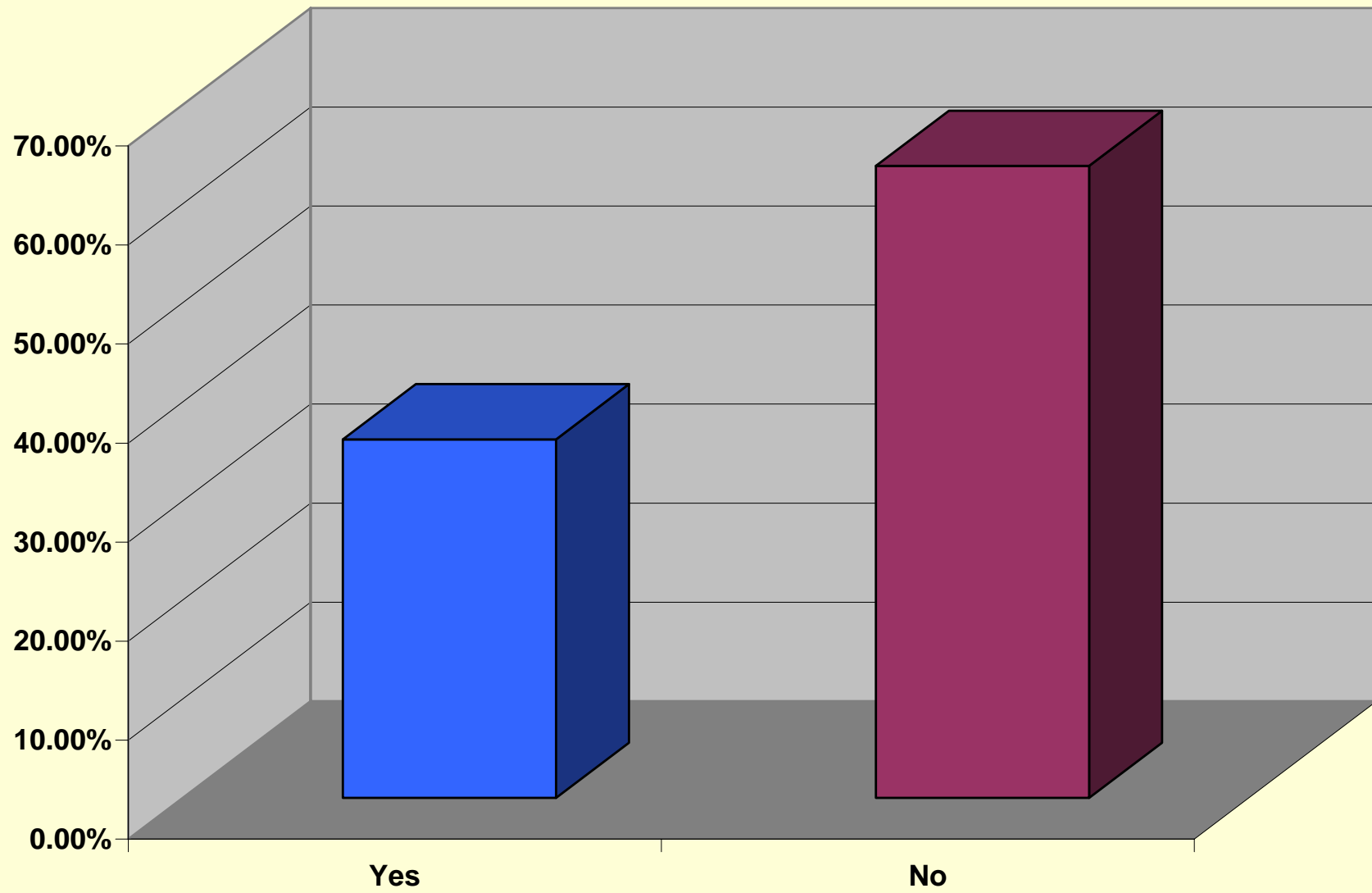
In 61% of the exposures, the medication was in its usual location



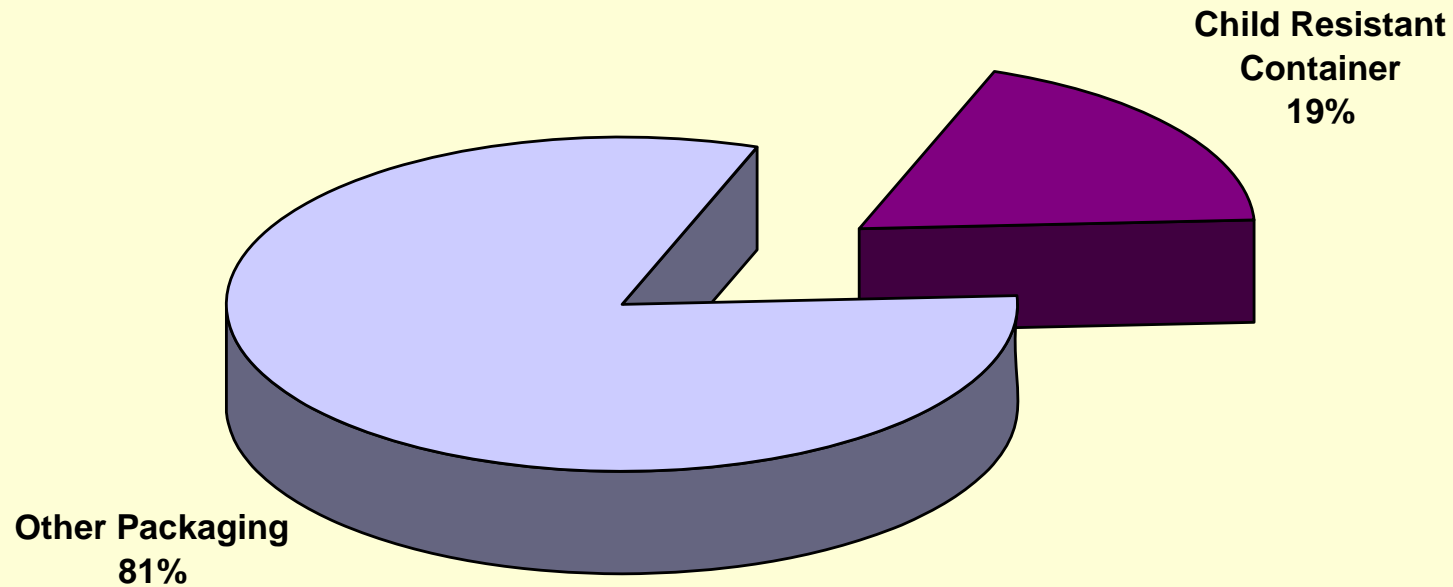
Results

- In 65% of the calls the medication was not in it's original container.
 - The majority of these had been repackaged in some type of daily organizer/reminder.
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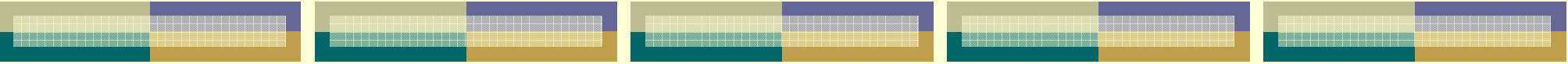
Was Medication in the Original Container?




Packaging



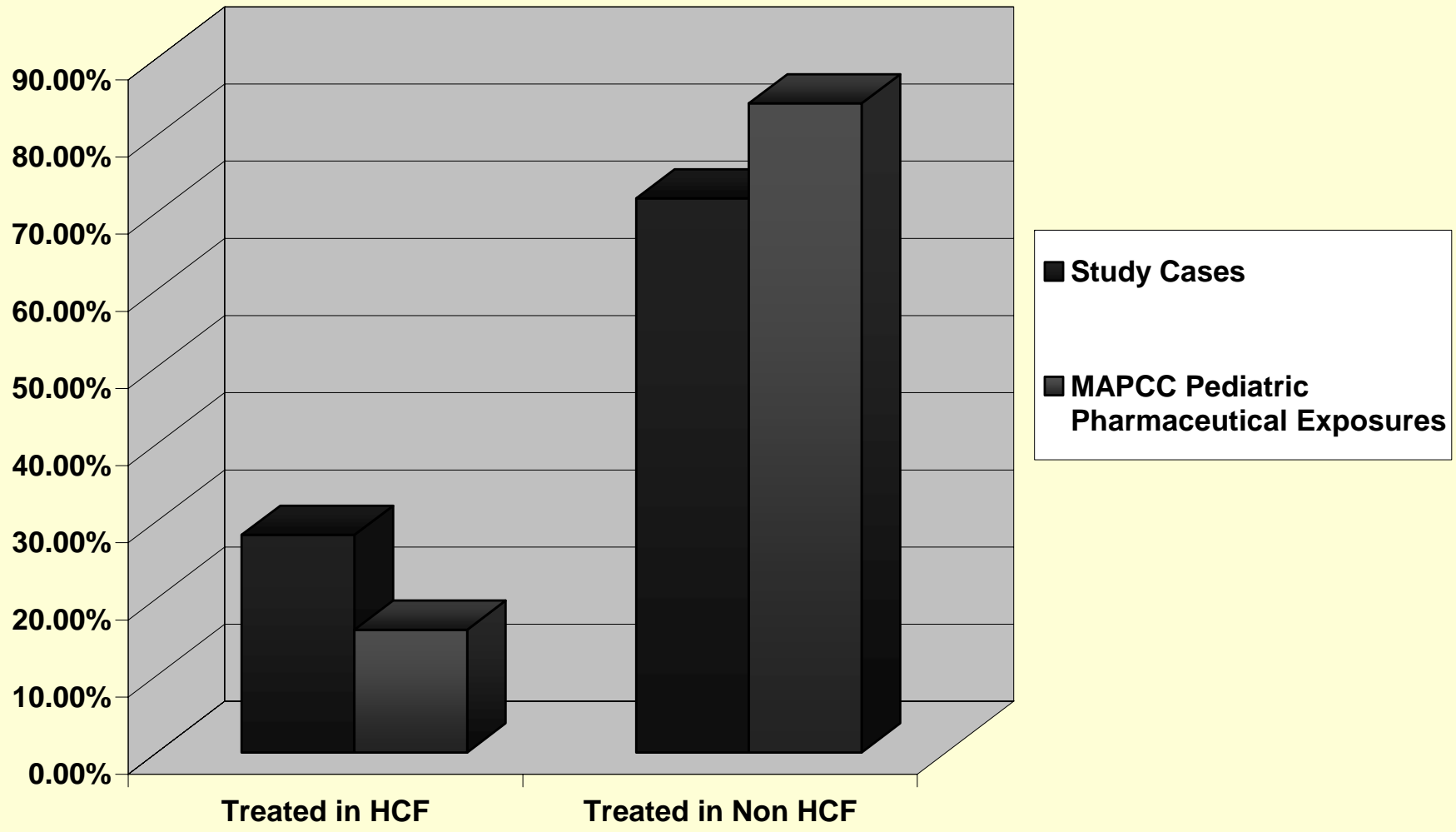
The medication was not in a child-resistant container in 81.4% of the exposures



Results


- Children were treated in a health care facility in 28.2% of these cases, as compared to 15.9% of other pediatric pharmaceutical exposures reported to MAPCC during this same time frame ($p < 0.001$)
- 

Treatment Site






Limitations

- Contact information was not always available for children that were treated in a health care facility if the health care facility was the initial contact.
 - Study relied on MAPCC staff to determine if the medication ingested was the grandparent's medication.
 - Some callers did not have phone numbers for follow-up survey
- 




Discussion

- Traditional poison education programs may overlook this group of caregivers.
 - In 50% of the callers surveyed, the responders indicated that he/she had not received any information regarding poison prevention.
 - This is a concern, since the medication for older adults are some of the most toxic and may present the highest risk.
- 




Conclusion

- With the increase of grandparents caring for young children, this is an area of poison prevention education that needs to be targeted
 - So, expect to see more about this from the MAPCC
- 




Professional Involvement- Kansas

- Presentations throughout State
 - Conferences
 - Videoconferences
 - Kansas Department of Health and Environment
 - Kansas Lead Poisoning Prevention Program
 - Environmental Task Force
 - Governor's Hospital Bioterrorism Preparedness Program
 - Chempack Planning
 - Epidemiology Hotline Services
- 




Professional Involvement- National

- Homeland Security
 - Center's for Disease Control and Prevention
 - Pediatric Environmental Health Specialty Units
- 




WHAT IS A PEHSU?

A PEHSU is an interface between clinical medicine and public health. A PEHSU site is built around a collaboration between an AOEC Occupational & Environmental Medicine Clinic and the supporting institution's Department of Pediatrics. Generally, a PEHSU is located in an academic institution.





PEHSU BEGINNING

- 1996: ATSDR Child Health Initiative
 - 1996 to 1998: PEHSU Program Catalyst
 - Methyl Parathion Exposure in 400+ children in Chicago, Mississippi, and Cleveland
 - Mercury Exposure in New Jersey
 - Pediatricians had little or no knowledge re: environmental exposures
 - 1998: first 2 PEHSU sites formed in Seattle, WA and Boston, MA.
 - 2005 Children's Environmental Health Excellence Award
- 

Funding and Management of PEHSU Program

- Agency for Toxic Substances and Disease Registry (ATSDR)
- U.S. Environmental Protection Agency (EPA)
- Association of Occupational & Environmental Clinics (AOEC)





Some Environmental Hazards

- Indoor Air Pollutants
 - Outdoor Environmental Hazards
 - Heavy Metals/Metalloids
 - Water/Soil/Food Toxins
 - Teen Workplace Exposures
 - Built Environments
 - Radiation Exposure
 - Environmentally Related Illness
 - Bioterrorism
- 

PEHSU SITES

REGION 7

MidAmerica Pediatric Environmental Health Specialty Center
The University of Kansas Medical Center
Kansas City, KS

Canada

Child Health Clinic
Misericordia Community Hospital
and Health Centre, Edmonton,
Alberta

REGION 8

Rocky Mountain Regional Pediatric Environmental Health Specialty Unit
Denver Health – University of Colorado, Denver, CO

REGION 9

University of California San Francisco Pediatric Environmental Health Specialty Unit
University of California San Francisco- Division of Occupational & Environmental Medicine, San Francisco, CA

University of California Irvine Pediatric Environmental Health Specialty Unit
University of California Irvine - Center for Occupational & Environmental Health, Irvine, CA

REGION 10

Northwest Pediatric Environmental Health Specialty Unit
Occupational & Environmental Medicine Program – University of Washington, Seattle, WA

Mexico

Unidad Pediátrica Ambiental – Mexico
Pediatric Environmental Health Specialty Unit
The National Institute for Public Health and The Children's Hospital of Morelos, Cuernavaca, Morelos

REGION 1

Pediatric Environmental Health Center
Children Hospital/ Occupational & Environmental Health Center –
Cambridge Hospital, Boston, MA

REGION 2

Mount Sinai Pediatric Environmental Health Specialty Unit
Mount Sinai School of Medicine,
New York, NY

REGION 3

Mid-Atlantic Center for Children's Health & The Environment
George Washington University School of Public Health & Health Services – Dept. of Environmental & Occupational Health, Washington, D.C.

REGION 4

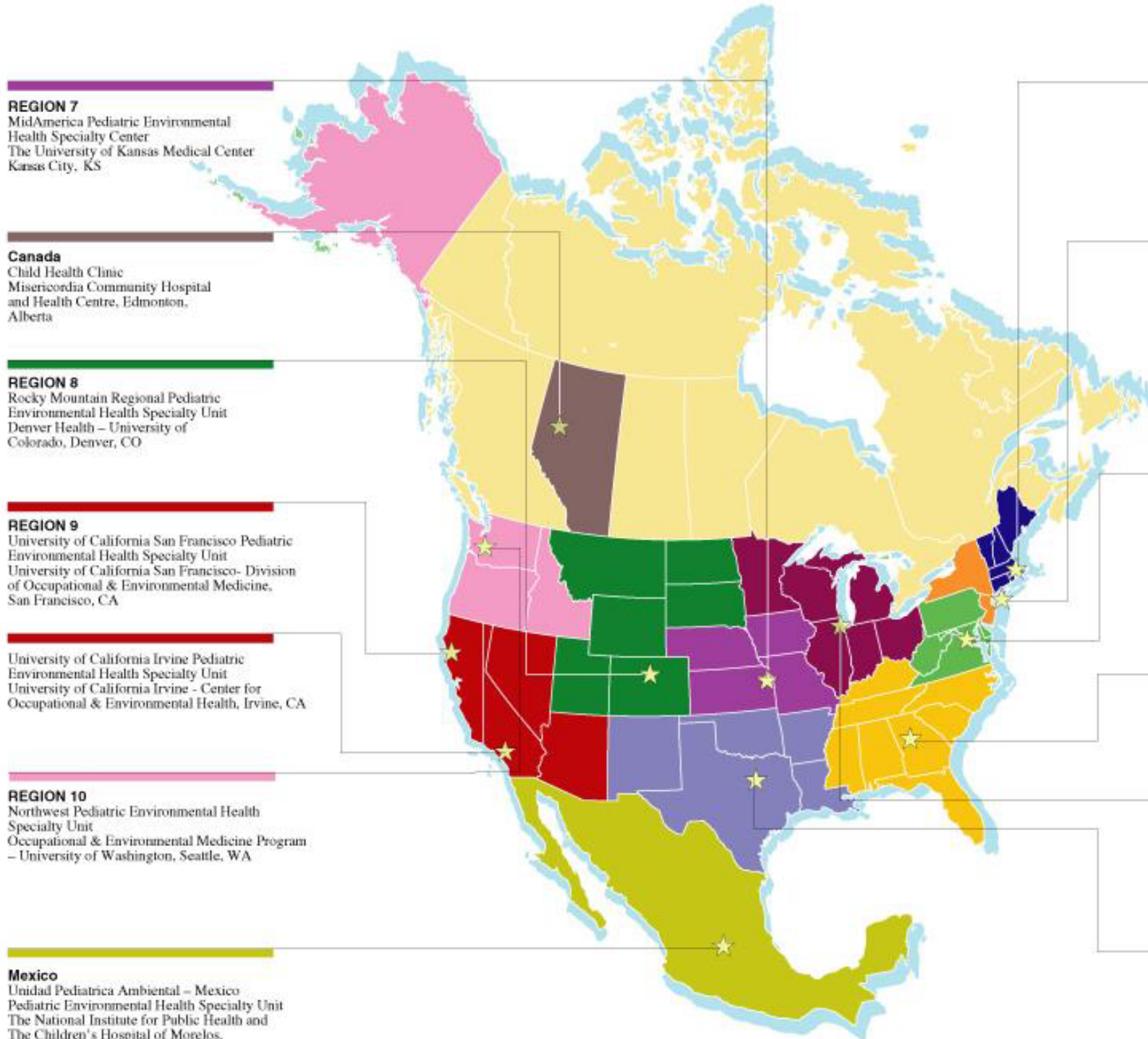
Southeast Pediatric Environmental Health Specialty Unit
Emory University, Atlanta, GA

REGION 5

Great Lakes Center for Children's Environmental Health
University of Illinois – Chicago & John H. Stroger, Jr. Hospital of Cook County, Chicago, IL

REGION 6

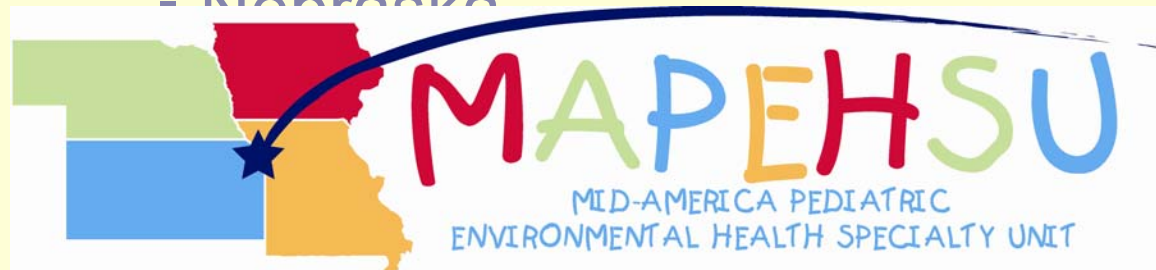
Southwest Center for Pediatric Environmental Health
The University of Texas Health Center at Tyler, Tyler, TX



Mid-America Pediatric Environmental Health Specialty Unit (MAPEHSU)


- The Mid-America Pediatric Environmental Health Specialty Unit (MAPEHSU) is one of 13 PEHSUs located in the continental United States and in Canada and Mexico. MAPEHSU provides service to EPA Region 7 which includes

- Iowa
- Kansas
- Missouri
- Nebraska





PEHSU Staff

- *Project director
 - *Project coordinator
 - *Pediatrician
 - *OEM physician
 - *Other specialists (toxicologist)
- 



H. William Barkman, MD, MSPH Kathryn Veal, MD, MPH

Co-Director of MAPEHSU

Director, Center for
Environmental and
Occupational Health
KUMC Campus

Pediatrician for MAPEHSU
Clinical Assistant Professor
Department of Pediatrics
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Jennifer Lowry, MD

Co-Director of MAPEHSU

Medical Director, Mid-
America Poison Control
Center
KUMC Campus

Mary G. Walker

Project Coordinator and
Manager for MAPEHSU
Center for Environmental &
Occupational Health
KUMC Campus



Our Partners

Center for Environmental & Occupational Health

The University of Kansas Medical Center

Number: 1-913-588-7146

Mid-America Poison Control Center

The University of Kansas Medical Center

Regional toll-free number: 1-800-222-1222

Iowa Statewide Poison Control Center

Toll-free number: 1-800-222-1222

Missouri Regional Poison Center

Toll-free number: 1-800-366-8888

Nebraska Regional Poison Center

Toll-free number: 1-800-222-1222




WHO WE SERVE

- Children and Parents
- Pediatric Health Care Professionals
- Teachers and Schools
- Government Agencies
- Community Organizations
- General Public



PEHSU Activities

PEHSU sites focus on the following three primary activities:

- Education/Outreach
 - Consultation
 - Referral
- 

PEHSU Activities



Education

Provide pediatric and environmental health education to practicing clinicians and health professionals, clinical trainees and the general public. Includes risk communication.


Formal Presentations and Exhibits



- Total of 40
- Audience total >3000 people
- Academic: Resident core, GR (KS to Botswana), AHEC, telemedicine, Rehab the Lab
- Professional: KS/NE/IA AAP, KS/MO/NE AAFP, KAPA, KSN, KTC, KPHN, KS Lead Coalition
- Public: senior citizens, Vietnam vets, diesel fuel spill, perchlorate



“Needs Assessment”

- Reviewed data from 4 region PCCs
 - Determined the leading exposure risks for children
 - Data used to inform:
 - development of educational materials (lectures, handouts, “hot topics” on website)
 - Agenda for CME conference Dec. 9
 - Development of online CME course
- 

PEHSU Activities

Consultation



Provide clinical/medical consultation to practicing clinicians, health officials, parents and others regarding environmental health exposures in children (predominately by telephone but also via e-mail and, occasionally, in person).

Who Calls?



- Parents (45%)
- Physicians (17%)
- Nurse Practitioners (12%)
- Grandparents (6%)
- Aunts, Teacher, Attorney, Health Department Staff, ATSDR Staff, County Extension Agent

Where do they hear about us?

- Unknown (48%)
- Poison Control Center (18%)
- Physician (13%)
- Media (7%)
- ATSDR Staff (5%)
- EPA Staff, AOEC Staff, Health Department Staff, Nurse, Attorney



Where are they located?

 **Iowa**—Council Bluffs

 **Kansas:**

- Chanute
- Dodge City
- Gardner
- Hays
- Hutchinson
- Kansas City
- Leavenworth
- Leawood
- Liberty
- Lindsborg
- Louisburg
- Meriden
- Mission
- Olathe
- Overland Park
- Paola
- Prairie Village
- Ramona
- Shawnee Mission
- Wamego
- Wichita

 **Missouri**

- Columbia
- Kansas City
- St. Joseph

 **Nebraska**

- Hastings
- Lincoln
- McCook

 **Denver, Colorado**

 **Atlanta, Georgia**

 **Cleveland, Ohio**

 **Houston, Texas**

Where do exposures occur?

- Home (70%)
- School (12%)
- Unknown (8%)
- Work (5%)
- Outdoors, landfill



How are they exposed?



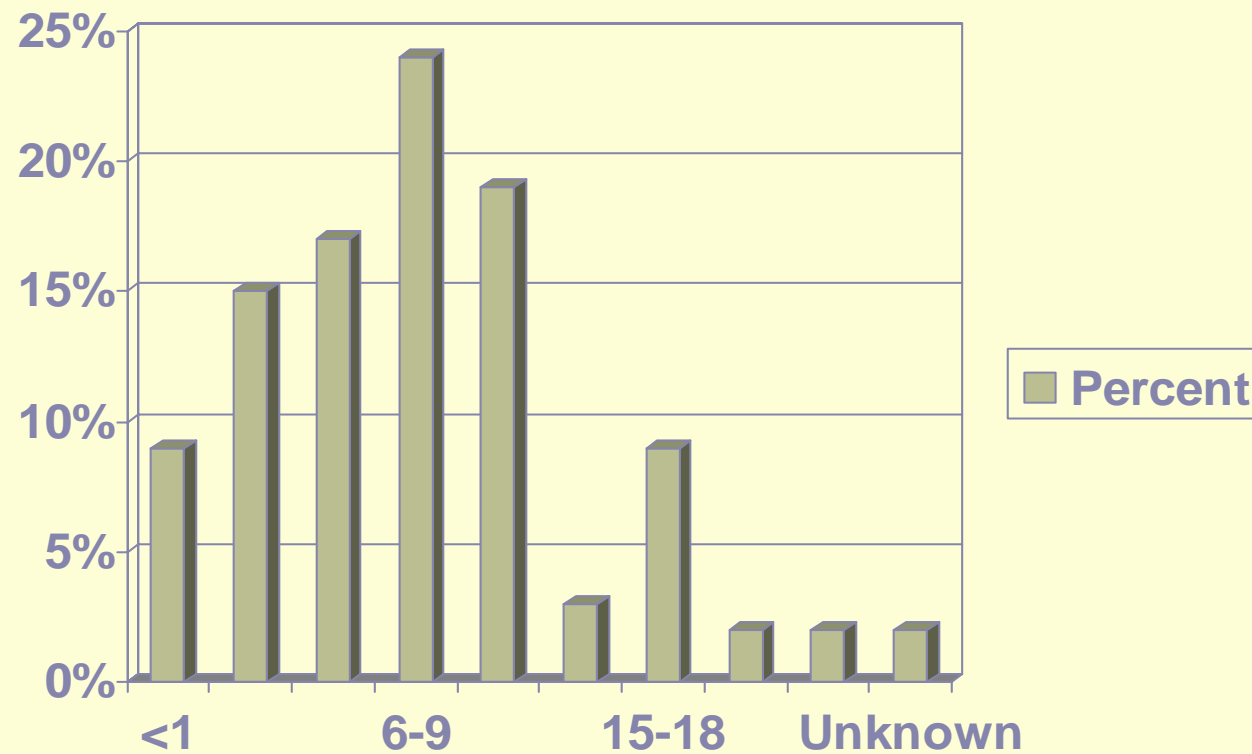
- Indoor air (67%)
- Unknown (14%)
- Outdoor air (5%)
- Work, Well water, Private pool, Plant, Soil, In utero, Breastmilk, School chemistry lab, Tube feedings

To what substances are they exposed?

- Fungus/Mold (27%)
- Lead (17%)
- Mercury (17%)
- Gas/Fumes (13%)
- Indoor Air Contaminants (7%)
- Asbestos, Pesticides (3%)
- Selenium, Plants, Soil toxins, Water toxins, Bromine, unknown chemicals



How old are they?



Clinical Consultation



- KU Pediatric Clinic
- Inpatient consultation
- Pediatric Environmental Clinic as a subspecialty clinic at KUMC (monthly)




Consultation to the Public

- Organic Style magazine has sought our assistance in identifying pediatric environmental health risks for a new column
 - Lawrence Pesticide Free Parks group solicited our support when approaching the City Council
- 




Pesticide Free Parks Proposal

- 14,900 children in Lawrence <19 yrs
 - 4,325 are <5 yrs
 - 52 public parks in Lawrence
 - Identified all pesticides currently used and medical problems that can be caused by exposure
- 



3-Year Plan


- Elimination of pesticides in all parks and on all outdoor grounds
 - Creation of a Least Toxic Integrated Pest Management program
 - Involvement of Lawrence community in maintenance of pesticide-free areas
 - Posting of appropriate signage from 1 week before to 1 week after application
- 



PEHSU Activities


Referral

Provide referral when indicated to public health agencies and clinical sub-specialists with expertise in pediatric environmental health.






Referrals

- EPA/ATSDR
 - State Health Departments
 - County Health Departments
 - Regional PEHSUs
 - Websites
- 



Research

- Not an official part of the national PEHSU mission, therefore not specifically funded
 - Seek funding from outside sources
 - Awarded a grant from the Children's Miracle Network to study the effect of schoolyard exposure to diesel school bus emissions on respiratory health in children
- 

Diesel School Bus Pilot Study



- MidAmerica Pediatric Environmental Health Specialty Unit (MAPEHSU)
- KU Department of Civil, Environmental, and Architectural Engineering
- To assess the effect of exposure to diesel bus emissions in the schoolyard on pediatric respiratory health




Top Reported Exposures in EPA Region 7

Kansas:

Household cleaning prod
Pesticides
Plants
Hydrocarbons
Arts/crafts/office supplies
Chemicals
Alcohols
Paints/stripping agents
Adhesives/glues
Fertilizers
Auto/air/boat
Industrial cleaners
Fumes/gases/vapors
Heavy metals
Building/Construction

Missouri:

Household cleaning prod
Plants
Pesticides
Arts/crafts/office supplies
Hydrocarbons
Alcohols
Chemicals
Fumes/gases/vapors
Adhesives/glues
Paints/stripping agents
Fertilizers
Auto/air/boat prod
Industrial cleaners
Building/Construction
Heavy Metals






Top Reported Exposures in EPA Region 7

Iowa

Household cleaning prod
Pesticides
Plants
Hydrocarbons
Alcohols
Chemicals
Fumes/gases/vapors
Arts/crafts/office supplies
Paints/stripping agents
Adhesives/glues
Auto/air/boat
Heavy metals
Building/construction
Industrial cleaners
Fertilizers

Nebraska

Household cleaning prod
Pesticides
Plants
Alcohols
Fumes/gases/vapors
Hydrocarbons
Chemicals
Arts/crafts/office supplies
Paints/stripping agents
Auto/air/boat
Adhesives/glues
Heavy metals
Fertilizers
Industrial cleaners
Building/construction



Toxicology Resources

- ToxMystery (<http://toxmystery.nlm.nih.gov>) is the National Library of Medicine's new, interactive learning site for 7-10 year old kids. It provides a fun, game-like experience while introducing potential environmental health hazards sometimes found in the home.
- ToxTown (<http://toxtown.nlm.nih.gov>) is the National Library of Medicine's interactive site that provides an introduction to toxic chemicals and environmental health risks you might encounter in everyday life, in everyday places.
- American Association of Poison Control Center's Home Page. (<http://www.aapcc.org>)
- Pediatric Environmental Health Specialty Unit's Home Page. <http://www.aoec.org/PEHSU.htm>



CALL ON US!

Mid-America PEHSU

Local: 913-588-6638

Regional: 1-800-421-9916

www2.kumc.edu/mapehsu



New drugs, antidotes and therapies require ongoing search for knowledge in toxicology and treating patients appropriately. Call the Mid-America Poison Control Center to help you.